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# 5 Years In the War... A Perspective of Where We've Been and Where We Are Going



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## TARDEC's Business Portfolio

- Combat and Tactical Vehicles
- Logistics Equipment
- Water Generation and Purification
- Fuels and Lubricants
- Military Bridging
- Fuel and Water Storage, Distribution and Quality Surveillance Equipment
- Countermine Equipment






TARDEC is responsible for research, development and engineering support to more than 2800 Army systems and many of the Army's and DoD's top joint warfighter development programs.

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# INSIGHT INTO ARMY GROUND VEHICLE BUSINESS

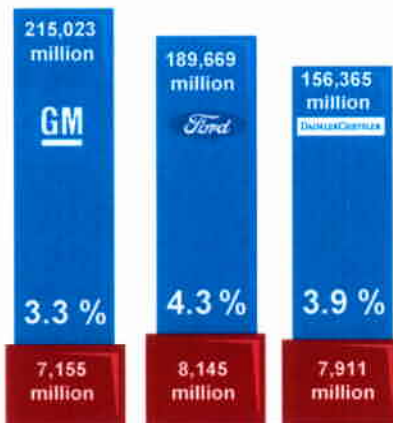
## TACOM LCMC (2007)\*



\*Source Data:  
TACOM Business Management Office

## US AUTOMOTIVE INDUSTRY

(2007 Dollars based on 2004 figures at  
a rate of inflation of 3.25% )\*\*



## Other US INDUSTRY (2007 Dollars based on 2004 figures at a rate of inflation of 3.25% )\*\*



\*\*Based on 2004 Annual Reports

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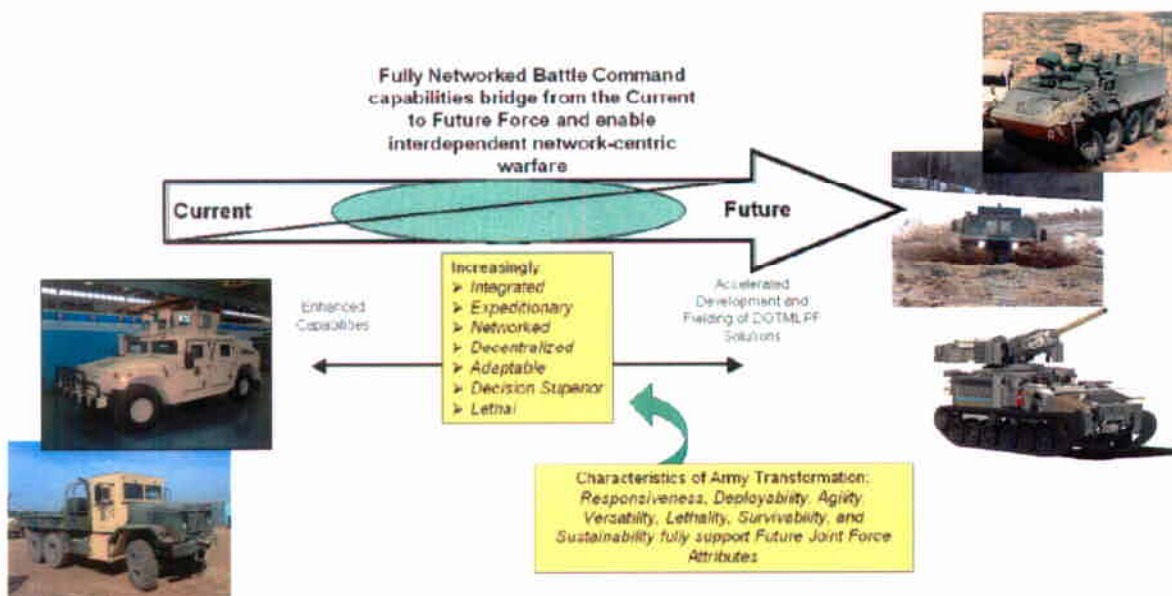
3

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## TARDEC Technologies a Part of Army Transformation

*Transforming technology for the future  
while serving the forces in contact.*



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4

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# TRENDS IN SYSTEM ACQUISITION



- Moving from **serial, phased milestones** to **addressing full lifecycle, parallel events**
- Moving from the **age of creating information** to the **age of leveraging information, data, and expertise** ----**GLOBALIZATION**
- Moving from **physical and virtual prototypes** to **collaborative product commerce**
- Moving from **drawing and document creation** to **information reuse and management**

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## Trends on the Systems – Estimated Miles Per Year

COMBAT SYSTEM		
SYSTEM	PEACETIME ANNUAL OPTEMPO	ANNUAL OIF (Operation Iraqi Freedom) OPTEMPO
M1126 STRYKER ICV	N/A	13000
M1A2 ABRAMS	736	3600
M3A3 BRADLEY	786	10000
M113A3 APC	287	900
TACTICAL VEHICLES		
M1114 - Up Armored HMMWV	5464	30000
M998 HMMWV	2165	10000
M915A3 Line Haul	6621	21000
M1070 HET	1069	17000
M1075 PLS	1572	3000

82% Increase in OIF Annual OPTEMPO Usage over peacetime use



Stryker



Abrams



Bradley



M1114 Up Armored HMMWV



M915

Source of Data - Army Theater Part Usage Reports and Cost Database.

Peacetime Data reflects 2002 timeframe. SDC Data is based on data being collected in theater from 2004 to August 2006 timeframe.

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6

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## Strains on Our Current Systems



- Extreme environmental temperatures leading to excessive engine temperatures and fuel consumption
- Excessive weight from the Add-on-Armor
- Excessive amounts of dirt and sand interfering with system operations
- Excessive speeds over rough terrain
- Excessive idling of vehicles based on mission profiles required to meet mission needs
- Lack of scheduled maintenance or incomplete maintenance
- Rough terrain resulting in obstacles impact damage
- Vehicles taking large amounts of ballistic damage

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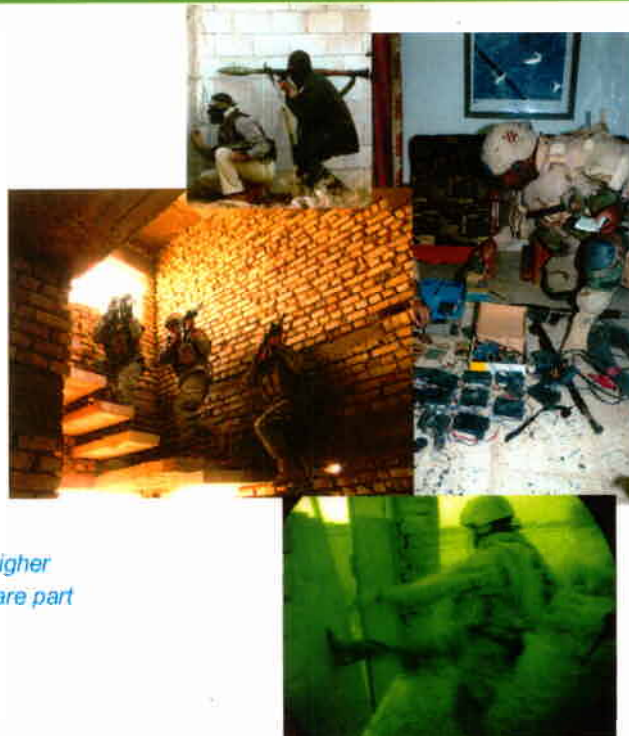
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7

## Evolving Threat – An Enemy That Adapts and Learns

- Asymmetrical Tactics
- Urban/Guerilla Warfare
  - Hide in plain sight
  - Use of hostages
- Insurgent Weaponry
  - Improvised explosive devices
  - Rocket-propelled grenades
  - Blasting caps
  - Small Arms
  - Anti-tank weapons
  - Biological and chemical weapons
  - Chlorine
  - Precision weapons
  - Automatic and self-loading rifles



*"...Insurgents are always 'seeking to achieve higher levels of effectiveness' and these new tactics are part of the normal 'evolution of sophistication.'"*

- Associated Press

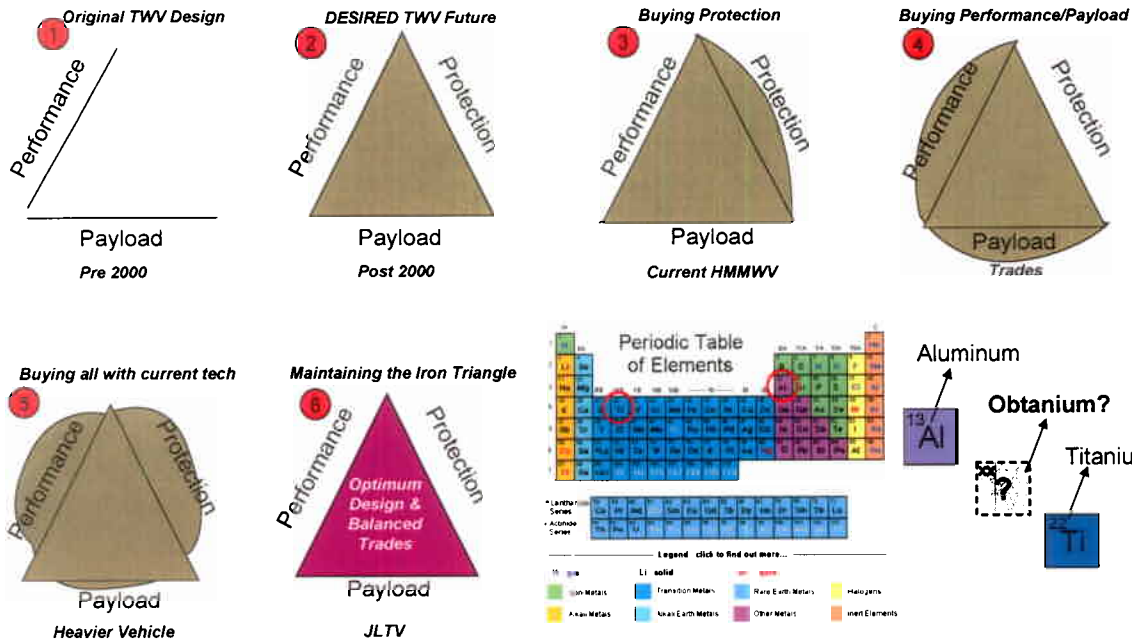
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8

## Constant Need to Balance System Performance, Protection, and Payload



S&T needs to define/achieve "Obtanium" for Light Weight Armor that is affordable or an Integrated Approach

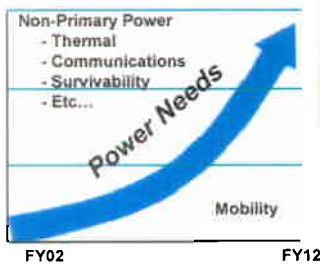
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9

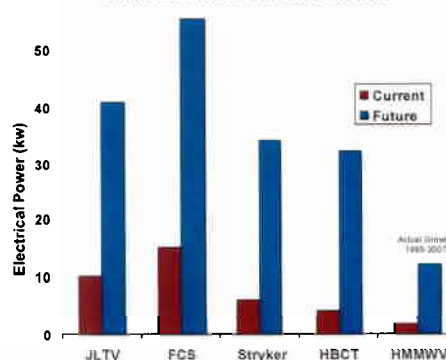
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## Additional Demands for Ground Vehicle Power and Energy



Non-Primary Power  
Estimated Electrical Power Growth



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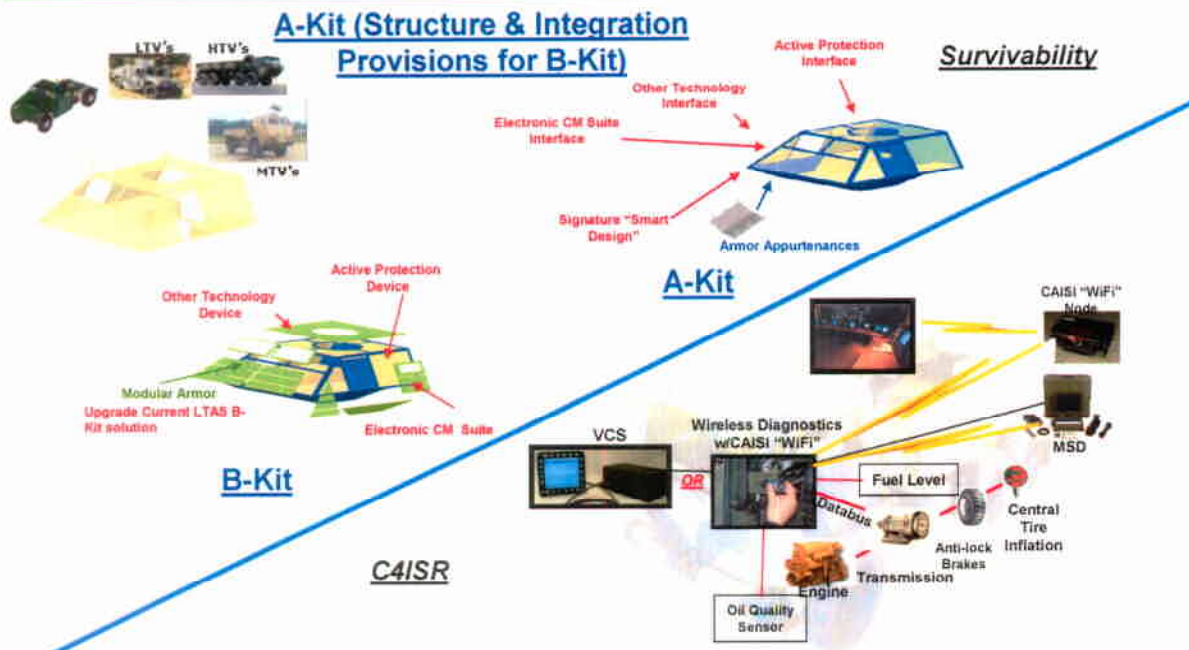
10

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# Modularity – Design Approach



**"Giving the Commander in the Field the Ability to Adapt to Changes...to Mission...to Threat...to Technology!"**

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## Ground Vehicle Systems and Support Equipment – For Today and Tomorrow



### Current

70 Ton Main Battle Tank  
Unarmored Tactical  
100% Manned Systems  
Conventional Power Trains  
Passive Suspension  
Steel Track  
Periscopes  
Conventional Armaments  
Point-to-Point Voice Communication

Enabling the Future Force

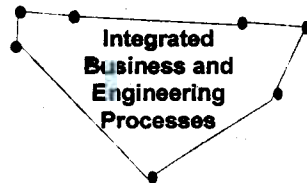
### Future

25-30 Ton Manned Ground Vehicle (FCS BCT)  
Armored Tactical  
Combined Manned/Unmanned Capabilities  
Hybrid Electric Systems w/Exportable Power  
Active Suspension  
Segmented Band Track  
Indirect Vision Driving  
High Power (EM) and Laser Weapons  
Shared Common Operating Picture  
Onboard Water Generation  
Fire-Resistant Fuels  
Laser Protection  
Diagnostics/Prognostics  
Integrated C4ISR



## Global Problems Need Global Solution Sets

- NGIC, Field Issues, Data Collection  
Test Lesson Learned
- Near real-time access to theater data
- Ability to assess trends and respond



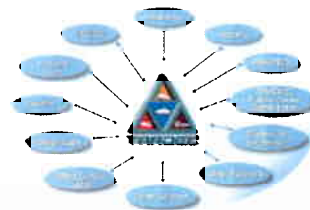
### Integrated Tools/Processes



### Integrated Data

- Information and data easily located and accessible - especially needed when communicating and collaborating among globally diverse organizations
- Types of information – product, program, M&S and analysis, SME, Technology
- Requires Government to negotiate access and visibility to all information
- Accessible data from multiple, distributed sources

### Integrated People/Expertise



Quick ability to adapt to changes in threat, changes in advances and changes in technology.

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13

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14

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So how do we get  
there?

**YOU & Partnerships**

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ARE ON THE GROUND

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